What is Claimed is:

1. A magnetic recording medium comprising:

a nonmagnetic substrate;

an underlayer structure on the substrate; and

a magnetic recording layer on the underlayer structure,

wherein the magnetic recording layer is composed of a Co alloy,

wherein the underlayer structure comprises a combination of at least two nonmagnetic underlayers each composed of a material selected from pure metals and alloys having a bcc structure, and a Cr-Mn alloy thin film provided between the two nonmagnetic underlayers.

2. The magnetic recording medium according to claim 1, wherein the nonmagnetic underlayers are each composed of pure Cr or a Cr alloy, and the Cr-Mn alloy thin film has an Mn content of not more than 20 at% and a thickness thereof ranging 0.5 nm to 3 nm.

3. The magnetic recording medium according to claim 1, wherein the nonmagnetic underlayers are each composed of pure Cr or a Cr alloy, and the Cr-Mn alloy thin film has an Mn content of not more than 30 at% and a thickness thereof ranging 0.5 nm to 2.5 nm.

4. The magnetic recording medium according to claim 2, wherein one of the two underlayers is composed of pure Cr and the other of the two underlayers is composed of an alloy of Cr and at least one element selected from Mo, W, V, Ti, B and Ta.

5. The magnetic recording medium according to claim 3, wherein one of the two underlayers is composed of pure Cr and the other of the two underlayers is composed of an alloy of Cr and at least one element selected from Mo, W, V, Ti, B and Ta.

6. The magnetic recording medium according to claim 4, wherein the other of the two underlayers is composed of an alloy of Cr and Mo.

7. The magnetic recording medium according to claim 5, wherein the other of the two underlayers is composed of an alloy of Cr and Mo.

8. The magnetic recording medium according to claim 1, wherein the nonmagnetic substrate is composed of an aluminum alloy having thereon an Ni-P plating layer.

9. The magnetic recording medium according to claim 8, wherein the Ni-P plating layer that has a texture with an average roughness of 0.5 nm in a circumferential direction of the substrate.

10. The magnetic recording medium according to claim 1, further including a protective layer on the magnetic recording layer.

11. An underlayer structure for a magnetic recording medium, comprising:

at least two nonmagnetic underlayers each composed of a material selected from pure metals and alloys having a bcc structure; and

a Cr-Mn alloy thin film provided between the two nonmagnetic underlayers.

12. The underlayer structure according to claim 11, wherein the nonmagnetic underlayers are each composed of pure Cr or a Cr alloy, and the Cr-Mn alloy thin film has an Mn content of not more than 20 at% and a thickness thereof ranging 0.5 nm to 3 nm.

13. The underlayer structure according to claim 11, wherein the nonmagnetic underlayers are each composed of pure Cr or a Cr alloy, and the Cr-Mn alloy thin film has an Mn content of not more than 30 at% and a thickness thereof ranging 0.5 nm to 2.5 nm.

14. The underlayer structure according to claim 12, wherein one of the two underlayers is composed of pure Cr and the other of the two underlayers is composed of an alloy of Cr and at least one element selected from Mo, W, V, Ti, B and Ta.

15. The underlayer structure according to claim 13, wherein one of the two underlayers is composed of pure Cr and the other of the two underlayers is composed of an alloy of Cr and at least one element selected from Mo, W, V, Ti, B and Ta.

16. The underlayer structure according to claim 14, wherein the other of the two underlayers is composed of an alloy of Cr and Mo.

17. The underlayer structure according to claim 15, wherein the other of the two underlayers is composed of an alloy of Cr and Mo.

18. A method of forming a magnetic recording medium comprising the steps of:

providing a nonmagnetic substrate;

forming an underlayer structure on the substrate; and

forming a magnetic recording layer on the underlayer structure,

wherein magnetic recording layer is composed of a Co alloy,

wherein the underlayer structure comprises a combination of at least two nonmagnetic underlayers each composed of a material selected from pure metals and alloys having a bcc structure, and a Cr-Mn alloy thin film provided between the two nonmagnetic underlayers.

19. The method according to claim 18, wherein the nonmagnetic underlayers are each composed of pure Cr or a Cr alloy, and the Cr-Mn alloy thin film has an Mn content of not more than 20 at% and a thickness thereof ranging 0.5 nm to 3 nm.

20. The method according to claim 18, wherein the nonmagnetic underlayers are each composed of pure Cr or a Cr alloy, and the Cr-Mn alloy thin film has an Mn content of not more than 30 at% and a thickness thereof ranging 0.5 nm to 2.5 nm.

21. The method according to claim 19, wherein one of the two underlayers is composed of pure Cr and the other of the two underlayers is composed of an alloy of Cr and at least one element selected from Mo, W, V, Ti, B and Ta.

22. The method according to claim 20, wherein one of the two underlayers is composed of pure Cr and the other of the two underlayers is composed of an alloy of Cr and at least one element selected from Mo, W, V, Ti, B and Ta.

23. The method according to claim 21, wherein the other of the two underlayers is composed of an alloy of Cr and Mo.

24. The method according to claim 22, wherein the other of the two underlayers is composed of an alloy of Cr and Mo.